

NOTEBOOK

PERSONAL COMPUTER



8200 Series

8200

User's Manual

Notice

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First Edition, April 1993

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1. Follow all warnings and instructions marked on this product.
2. Unplug this product from the wall outlet before cleaning it or connecting peripheral devices.
3. Use a damp cloth with mild soap to clean this product. Do not apply cleaner directly to the unit. Do not use volatile or abrasive cleaners on this product.
4. Do not place this product on an unstable surface where it may fall.
5. Do not block or cover the system's ventilation openings. Also, never place this product near or over a radiator or heat register, or in a built-in installation unless adequate ventilation is provided.
6. Operate this product in accordance with its rated power specifications. If you are unsure of your local power specifications, consult your dealer or local power company.
7. This product is equipped with a 3-wire grounding type plug. This is an important safety feature; do not defeat its purpose. If you do not have access to such power, have a qualified electrician install a proper outlet.
8. Do not allow anything to rest on the power cord. Do not locate this product where persons will likely walk on the cord.
9. If an extension cord is used with this product, make sure the total current drawn by the products plugged into the extension cord do not exceed the extension cord or outlet power ratings.
10. Do not allow foreign matter to enter the system.
11. Do not attempt to service this product yourself. Opening or removing covers may expose dangerous voltage points. Refer all repair work to qualified service personnel.

12. Unplug this product from the wall outlet, do not operate it, and immediately seek proper servicing if:
 - a. The power cord or plug is damaged or frayed.
 - b. Liquid or foreign matter has entered this product.
 - c. This product has been exposed to rain or water.
 - d. This product has been dropped or damaged.
 - e. This product exhibits a distinct change in performance, indicating a need for service.
13. Do not use any battery pack other than the one specifically designed for this system. Batteries may explode or leak if exposed to fire or improperly handled or discarded. Refer battery replacement to your dealer or qualified service personnel.
14. Only use UL listed/CSA certified, type SVT/SJT power cords rated 6A 250V minimum (VDE approved or equivalent). It should be a detachable type with a minimum length of 6 feet.
15. Adjust only those controls that are covered by these operating instructions. Improper adjustment of other controls may result in serious damage to the system which is not covered by the warranty.

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Chapter 1

Getting Started

Overview

This chapter provides a short introduction and tutorial that will familiarize you with the 8200 Notebook Computer system and get you up and running quickly. It provides:

-  A first look at the system.
-  Basic information you need to know before you operate the system for the first time.
-  An introduction to setting up and turning on the system.

For detailed explanation of the Notebook Computer's features and operation, refer to the following chapters.

Getting Started

Unpacking

Before doing anything else, carefully unpack the 8200 and its included accessories. Use Figure 1-1 for reference and check that the following items are present and in good condition.

- 8200 Notebook Computer.
- Carrying Bag.
- Universal power Adapter.
- AC Power Cord.
- User's Manual.
- PS/2 Keyboard Transfer Cable.
- 8200 Utilities Diskette.

If there are any discrepancies or problems, contact your dealer immediately. Be sure to save the packing materials in case you need to repack and ship the Notebook Computer in the future.

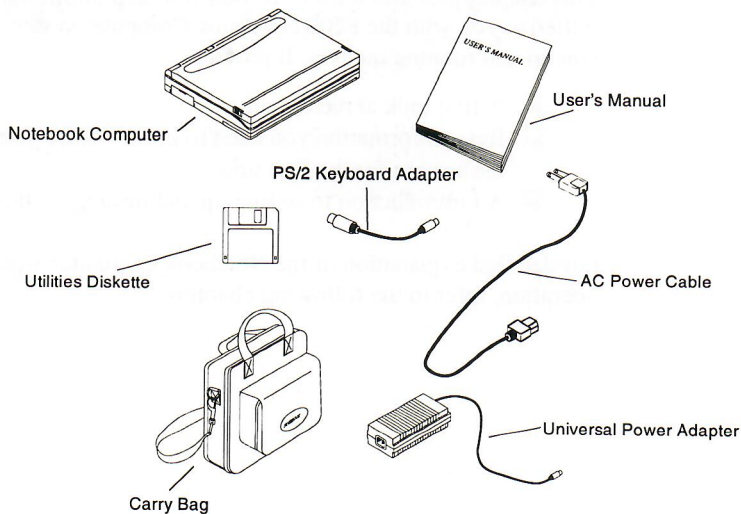


Figure 1-1
The 8200 and its included accessories.

A Brief Introduction

The 8200 Notebook Computer is a state-of-the-art, *high-performance*, notebook computer system. It offers a host of features specially designed to enhance performance and usability:

- Advanced 486 CPU with optional 128K external cache memory.
- Completely invisible, hardware-based Power Management Unit (PMU). The PMU requires no external controlling software and introduces no performance losses. Yet, it is able to greatly reduce system power consumption and heat generation. This means longer portable operation time and improved reliability.
- Color or monochrome VGA compatible display driven by a local-bus controller.
- 4MB of internal, LIM 4.0 compatible DRAM (expandable to 20MB).
- Type III PCMCIA expansion slot (2 Type II slots).
- 2-1/2" high capacity hard disk drive.
- 3-1/2" 1.44MB floppy diskette drive.
- Trackball pointing device.
- Rechargeable, high energy internal battery pack.
- Extended multi-function keyboard.
- Five external ports to connect:
 - A PS/2 device.
 - An external super-VGA monitor.
 - A parallel device.
 - A serial device.
 - A docking station.

Operating Environment

Thanks to the 8200's ability to run on battery power, its compactness in size, and light weight, it can be conveniently operated wherever the temperature and humidity are comfortable enough for you to work.

If you properly care for the 8200, it will provide many years of reliable service. However, remember this computer system is a precision instrument and it should not be:

- Exposed to excessive heat or direct sunlight.
- Subjected to shock or vibration.
- Exposed to strong magnetic fields.
- Left in a place where foreign matter or moisture may enter the system.

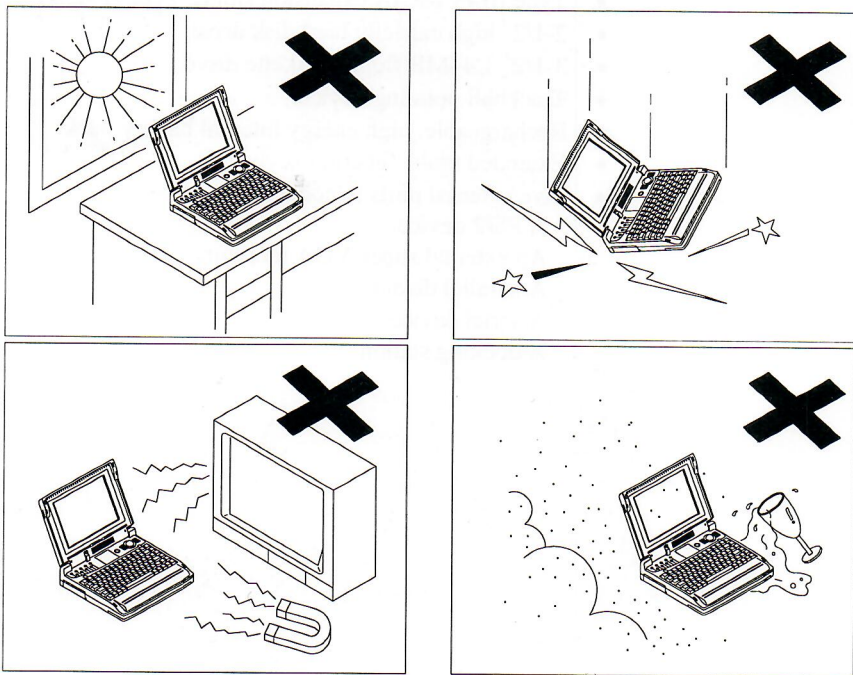


Figure 1-2
Caring for the 8200 Notebook Computer.

Basic Operation

Power

Before using the 8200, you must supply it power. If this is the first time the 8200 will be operated, you should use the AC power source since the internal battery pack may have self-discharged during shipment.

AC Power

The 8200 features a universal, auto-switching power adapter. This adapter is suitable for use nearly anywhere.

Note

The power adapter plug is polarized and must be inserted into the Notebook Computer with its arrow on top.

1. Make sure the local AC mains (input voltage) falls within the operating range of the power adapter. If not, you may need to use an additional power converter.
2. Connect the AC power cord to the power adapter.
3. Plug the power adapter to the DC-In socket on the rear panel of the Notebook Computer.
4. Plug the AC power cord into a properly grounded outlet.
 - The DC/BAT light on the 8200 will light up red to indicate the unit is receiving power.

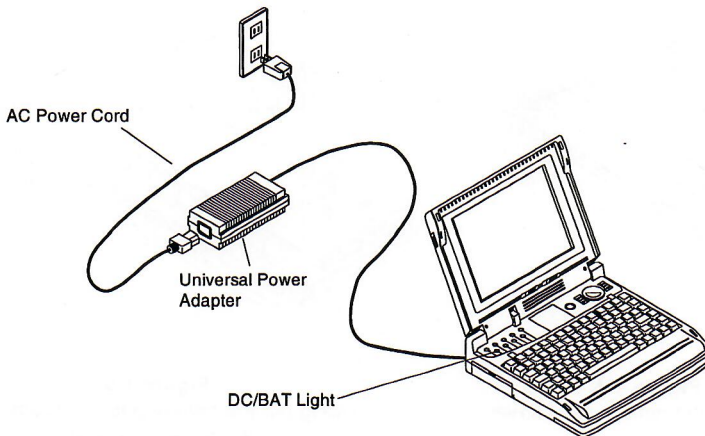


Figure 1-3
Using the 8200 with its Universal Power Adapter.

Battery Power

The 8200 is equipped with an internal, rechargeable battery pack which can provide up to three hours of continuous, portable operation. Before using the battery pack *for the first time*, you must remove a mylar insulator used to protect the battery during shipment.

Note

You must remove the battery insulator before you recharge the battery for the first time.

When reinstalling the battery pack, note that it will only fit in one way.

Preparing the Battery Pack

1. Place the 8200 Notebook Computer upside-down on a stable surface.
2. Remove the sliding battery cover by pressing at points A and B. Refer to Figure 1-4.
3. Lift out the battery pack and peel off the protective mylar insulator from the battery pack's terminals. Refer to Figure 1-5.
4. Reinstall the battery pack in the reverse order of removal. Make sure it is properly seated and locks into position.

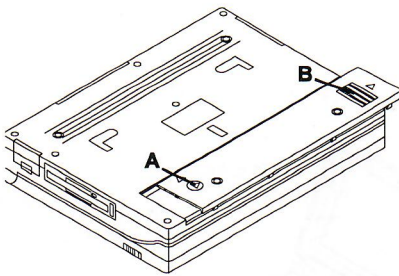


Figure 1-4
Removing the battery pack cover.

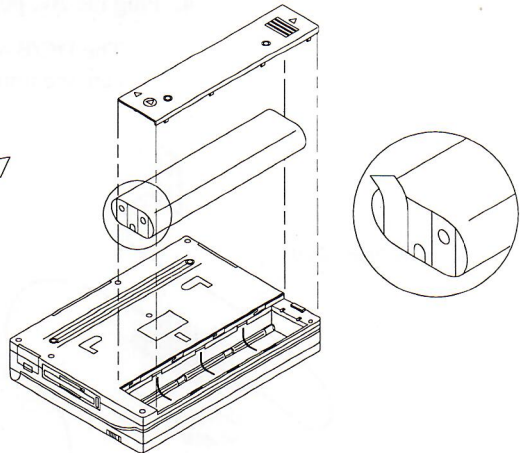


Figure 1-5
Lifting out the battery pack and removing the battery insulator.

Recharging the Battery Pack

The system's battery pack will recharge whenever the system is plugged into the AC power supply, regardless if the system is being operated or not. Please note the following points:

Note

*The power adapter has a locking type plug. Pull it by its **body** to remove it from the Notebook Computer.*

Do not pull it by the cord.

- You may connect the AC power adapter to the 8200 at any time to begin recharging the system's battery pack. You do not need to turn off the unit first.
- Recharge time is approximately two hours.
- After the battery pack is fully recharged the BL/BF indicator on the 8200 will light up green and the battery charger will automatically switch to trickle charge mode. See Figure 1-6.
- After recharging is complete, unplug the power adapter to use battery power or continue using AC power.

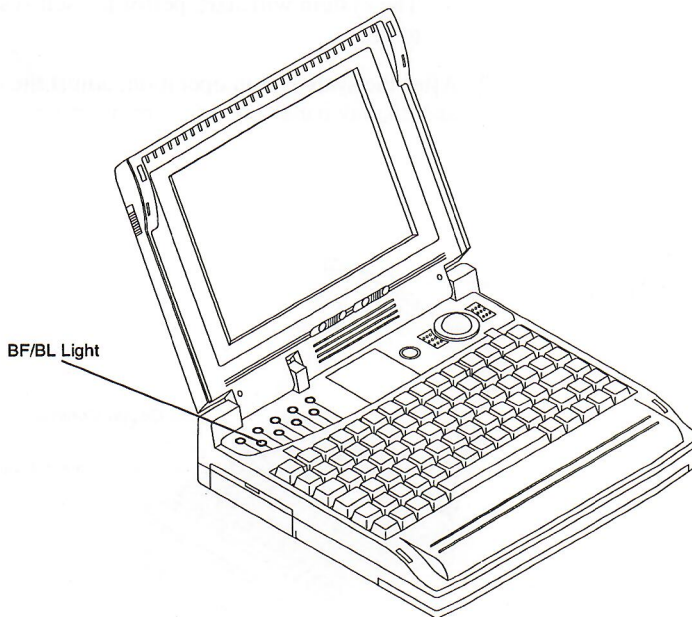


Figure 1-6

The BL/BF light will light up green after the battery is fully charged.

Setup and Operation

Open the Top Cover/Display Panel

The 8200's display panel is integrated into the system's top cover which locks shut for transportation. Open the top cover as follows:

1. Unlatch the two clasps located along the sides of the top cover of the Notebook Computer by sliding them forward.
2. Lift the top cover to reveal the display panel, keyboard and system controls.
3. Raise the display panel to a comfortable viewing angle.

Turn the System Power On

The system power button is located on the top cover, as shown in Figure 1-7.

1. Press the power button once to turn the system on. Press it again to turn the system off.
 - The system will start, perform a self-test, and attempt to boot.
2. After the system is in operation, adjust the display controls and display panel angle for optimum screen clarity.

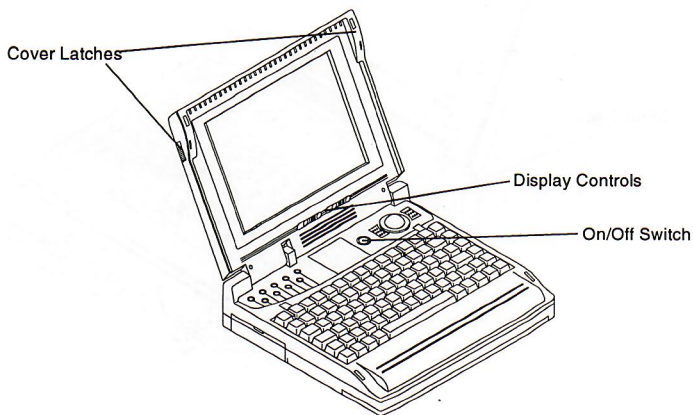


Figure 1-7
Operating the 8200.

System Features

Figure 1-8 shows the layout of the 8200 Notebook Computer and many of its special features. These features are discussed in detail in the following chapters.

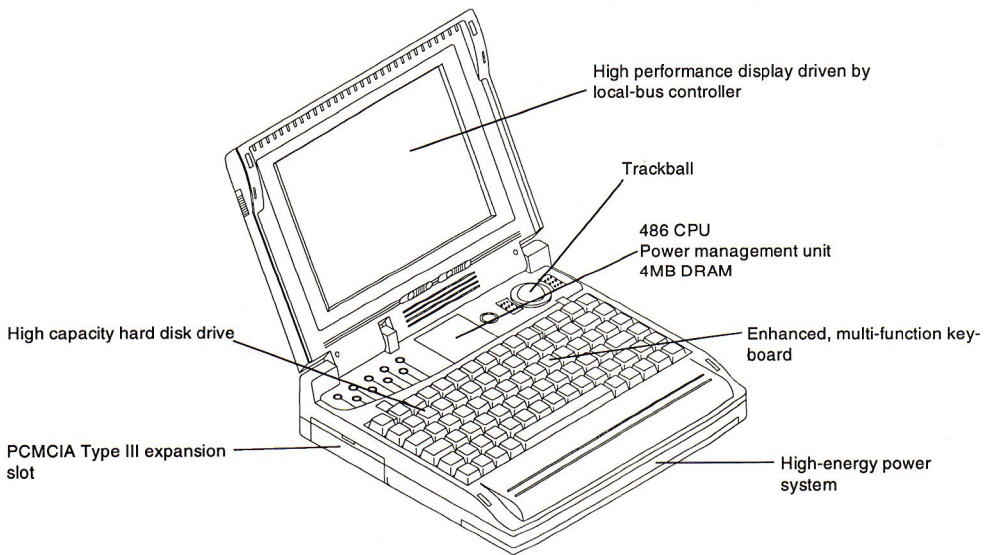


Figure 1-8
Features of the 8200 Notebook Computer.

System Features

Figure 1-1 shows the layout of the system. The system is designed to be used in a variety of ways. The following features are available:



Chapter 2

The System

Overview

The 8200 has many advanced features to help you with your computing work. This chapter describes each of the 8200's hardware features in detail and shows you how to use them. It covers:

-  A description of the system unit and its features.
-  How to use:
 - The system.
 - The keyboard.
 - The trackball.
 - The disk drives.
 - The PCMCIA expansion slot.
 - An externally connected monitor.

Description

Indicator Lights

The 8200 Notebook Computer features nine LED indicators to alert you of the system's status. They are shown in Figure 2-1.

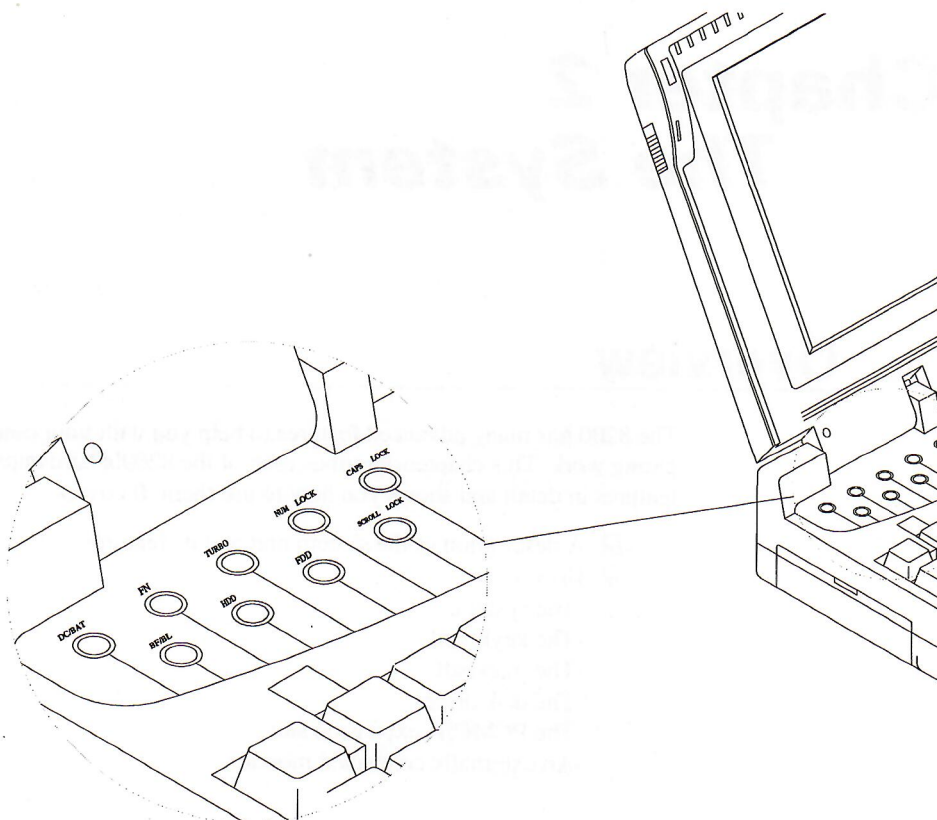


Figure 2-1
Indicator Lights of the 8200.

DC/BAT

DC/Battery Indicator. This indicator lights up red when the AC power adapter is used and green when battery power is used.

Fn

8200 Function Key Lock Status. This indicator lights up when the system's *Fn* key is locked on.

TURBO

Turbo Speed Indicator. This indicator lights up when the system is running in the "turbo" mode, (the maximum rated speed of the CPU).

NUM LOCK

Numeral Lock Indicator. This indicator lights up when the system's embedded numeric keypad function is active.

CAPS LOCK

Caps Lock Indicator. This indicator lights up when the keyboard's caps lock function is active.

BF/BL

Battery Full/Battery Low Indicator. This indicator lights up red and flashes when battery power is low, warning you to save your current data to prevent losing it. It lights up green when the battery pack is fully recharged.

HDD

HDD In-Use Indicator. This indicator lights up while the hard disk drive is being accessed.

FDD

FDD In-Use Indicator. This indicator lights up while the floppy diskette drive is being accessed.

SCROLL LOCK

Scroll Lock Indicator. This indicator lights up when the keyboard's scroll lock function is active.

Top-Front View

Opening the hinged top cover of the system unit will reveal the display panel, display contrast and brightness controls, and the system power switch. These items are shown in Figure 2-2.

Display Panel

This is the 8200's flat panel display. It is VGA compatible and driven by a local bus controller for high performance.

Power Switch

This is the system power switch. Press the button once to turn the system on. Press it a second time to turn the system off.

Trackball Pointing Device

The integrated trackball pointing device allows you to conveniently operate the 8200 "on the road" and still take advantage of software that requires a mouse.

Contrast Control

This slider controls the contrast of the display panel.

Brightness Control

This slider controls the brightness of the display panel backlight.

Note

Models with TFT active matrix displays do not have a contrast control.

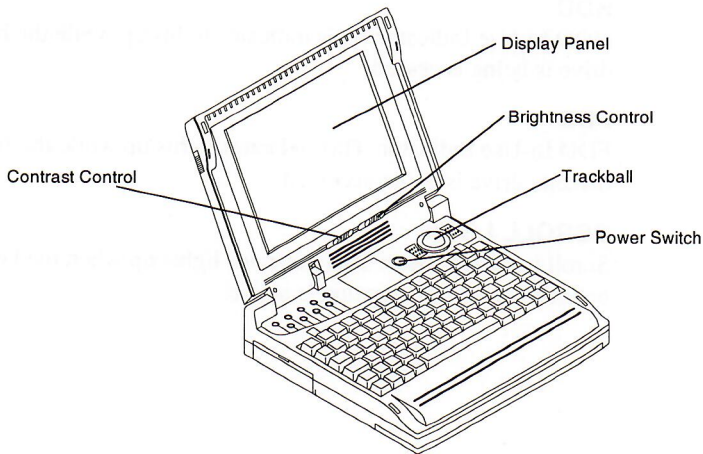


Figure 2-2
Top-Front view of the 8200.

Right View

On the right side panel, you will find the system's 3-1/2" high density floppy diskette drive and a port for an external Super-VGA monitor.

3-1/2", 1.44MB Floppy Diskette Drive

This is the location of the 8200's 3-1/2" high density floppy diskette drive. Press the button on its left side for diskette ejection.

External Monitor Port

This port, located inside the flip-down cover, allows the connection of an external monitor to the system. It uses a 15-pin connector and supports super-VGA, and SimulSCAN features.

Right-Side Top Cover Latch

Slide this latch forward (together with the left-side latch) to unlock the top cover.

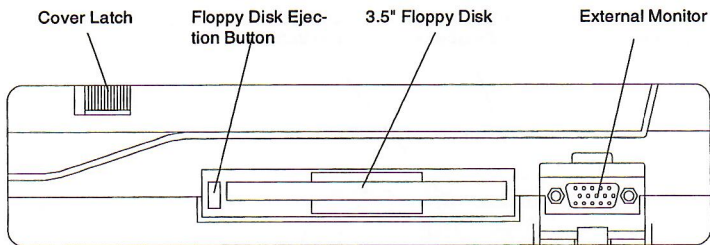


Figure 2-3
Right-side view of the 8200.

Left View

The left side of the 8200 features a PCMCIA expansion slot.

PCMCIA Type III Expansion Slot

The Type III PCMCIA expansion slot is located inside a flip-down panel. It allows you to conveniently attach numerous accessories to the 8200. It is equivalent to two Type II PCMCIA slots. The ejection button for the upper slot is located on the left. The ejection button for the lower slot is on the right.

Left-Side Top Cover Latch

Slide this latch forward (together with the right-side latch) to unlock the top cover.

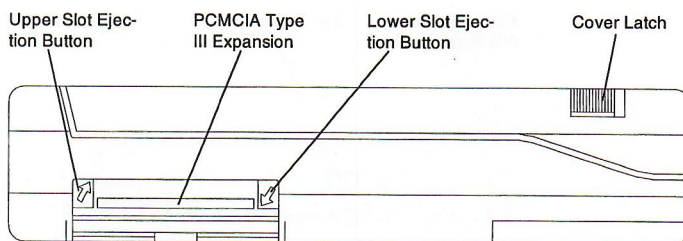


Figure 2-4
Left-side view of the 8200.

Rear View

The rear panel of the 8200 features five ports for the connection of an external power supply, a docking station, a PS/2 device, a parallel device, and a serial device. Figure 2-5 shows the layout of the 8200's rear panel.

Note

Be careful when inserting or removing the power adapter cable from the DC-in socket. The plug is polarized and has a safety lock.

DC-In Socket

This socket is where the 8200's universal AC/DC power adapter is connected to the system. The power adapter's plug is polarized and must be inserted into the DC-in socket with its flat side up. Once inserted, it will lock into place. To disconnect the power adapter, pull the plug (not the cord) directly back. The lock should release and the plug will come free.

Fan / Ventilation Port

The 8200 has a thermally activated fan. It will turn on only when necessary to minimize system power consumption. To ensure reliable operation of the system, do not obstruct or cover this ventilation port.

Expansion Port

This port, inside a removable cover, is for connecting the Docking Station. The Docking Station provides two 32-bit VESA standard and four 16-bit ISA expansion slots, a SCSI driver and port, a multimedia sound system, two drive bays, an internal power supply, a monitor shelf, and parallel and serial ports. All of these features are available through a convenient one-step, plug-in process making the 8200 a true desktop system.

PS/2 Port

An external PS/2 compatible keyboard or mouse can be connected to the system through this port. A PS/2 keyboard transfer cable has been included to allow the use of standard AT keyboards with this system. Connect any device that uses a software driver, such as a mouse, *before* loading its software. Otherwise, you may experience problems with the PS/2 device and the system's trackball.

Printer Port

This is a standard parallel printer port.

Serial Port

This is a standard RS-232 serial port. It features a 9-pin connector.

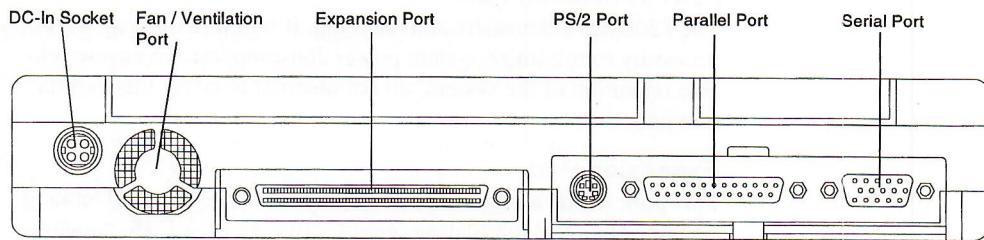


Figure 2-5
Rear-view of the 8200.

Operation

The System

Restarting the System

If you experience operating problems with the 8200, you may restart the computer using either of the following techniques:

Warm Boot

Restarts the system with a power and time saving, shortened version of the POST (see the next section for a description of POST). This method will usually reset the system but *may* not completely clear the contents of RAM memory.

1. Simultaneously press the *Ctl*, *Alt*, and *Del* keys.
 - The screen should go blank and then the system should restart. If it does not, you must cold boot the system.

Cold Boot

Restarts the system by completely resetting the 8200's CPU and RAM memory and forces the system to perform a complete POST. This method thoroughly eradicates all data in the system's RAM memory.

1. Turn the system power off.
2. Wait a few seconds.
3. Turn the power back on.

Note

If you experience problems restarting the 8200 using the "warm" boot method, use the "cold" boot method.

Note

"Turbo" mode is the fastest rated speed of the CPU.

Changing Operating Speed

The 8200 is capable of operating at two different speeds. Most of the time you will want to use the "turbo" mode for maximum processing speed. However, some older software is timing dependent and will not work well at the higher speeds offered by the 486 CPU. Therefore, you may switch to "standard" mode and force the CPU to run at low speed. To change the system operating speed:

1. Make sure the system is operating in a DOS-based mode or exit your application software and return to the DOS prompt.
 - 2a. Turbo Mode
To place the CPU in "turbo" mode, simultaneously press the *Ctrl*, *Alt*, and *↑* keys.
 - The system will beep twice and the Turbo indicator will light up.
 - 2b. Standard Mode
To place the CPU in "standard" mode, simultaneously press the *Ctrl*, *Alt*, and *↓* keys.
 - The system will beep once and the Turbo indicator will turn off.

The operating speed is automatically set when the system is started. The default speed may be changed from within the Setup menu.

The Keyboard

The 8200 utilizes an 86 key keyboard. It is laid out slightly differently from a standard AT keyboard, but it offers all of the same functions plus some special 8200 specific features. The keyboard can be divided into the following functional groups:

- Alphanumeric key group.
- Edit key group.
- Cursor control keys.
- AT "F" keys.
- 8200 special function key.
- Embedded numeric keypad.

Figure 2-6 shows the layout of the US English keyboard.

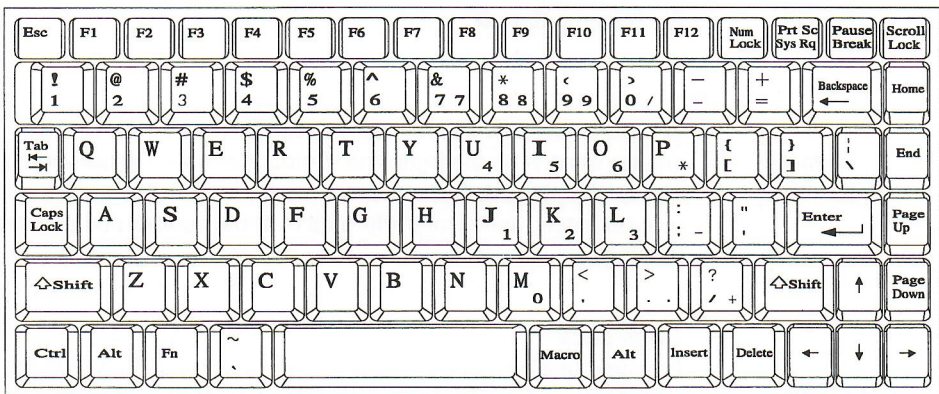


Figure 2-6
Layout of the 8200's keyboard.

Note

These key-board function descriptions are for the DOS command line. Their functions may vary with different software.

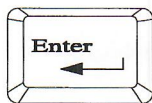
Alphanumeric Key Group

The main part of the keyboard is the alphanumeric key group which is used for entering most of your data. The keys in this group are arranged similarly to those of a standard typewriter and they are used in the same way. These keys are typematic, (self repeating) and will automatically repeat the same character if held down.

Some of the keys in this group have special functions or are not found on standard typewriters. Functional descriptions of these special keys are given below.

Enter

The *Enter* key is equivalent to the Return key on an electric typewriter. Pressing this key enters data on the screen into the computer and moves the cursor to the beginning of the next line.



Tab

The *Tab* key moves the cursor a number of spaces to the right or to the left. Pressing the *Tab* key alone moves the cursor to the right. Pressing the *Tab* key while holding down a *Shift* key moves the cursor to the left.



Shift

There are two *Shift* keys on the keyboard; one is on the left side and the other is on the right side. Holding down a *Shift* key while typing will place shifted characters on the screen, this includes uppercase letters, and symbols located over the number and punctuation keys.



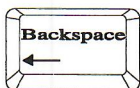
Caps Lock

Pressing the *CapsLock* key once, turns on its status light and shifts all letter keys from lower-case to uppercase. It does not affect number or symbol keys. Pressing this key again releases the *CapsLock* function and turns its status light off.



Backspace

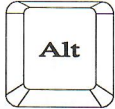
The *Backspace* key deletes characters on the screen while moving the cursor toward the left.





Control

The *Control* key is used in combination with other key(s) to perform specific functions or commands depending on the software being used.



Alt

The *Alt* key is used in combination with other key(s) to perform specific functions or commands depending on the software being used.



Scroll Lock

The *Scroll Lock* key is used to perform special operations. Its particular function depends on the software being used.



Escape

The *Esc* key is used to perform special operations. Its particular function depends on the software being used.



Print Screen

Pressing the *PrtSc* key while the system is operating in a text mode will send an ASCII screen dump to the printer.

System Request

Pressing this key while holding down the *Ctrl* key will issue the SysRq command to the system. SysRq performs different functions depending on the software being used.



Pause

Pressing the *Pause* key will issue the Pause command to the system. Pause temporarily freezes the system's functions; it restores them after any other key is pressed.

Break

Pressing this key while holding down the *Ctrl* key will issue the Break command to the system. Break stops the system's current function and returns you to the DOS prompt.

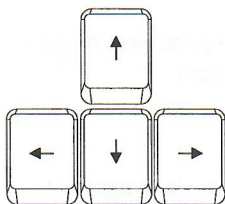
Chapter 2: The System

Edit Key Group

The keys labeled *Ins*, *Del*, *Home*, *End*, *PgUp*, and *PgDn* are known as “edit keys.” They are often used to format text that is typed into the computer. Their functions are software-specific. Refer to your DOS and software manuals for details regarding their usage.

Cursor Control Keys

Four cursor control keys, also called *Arrow* or *Direction* keys, are located below the *Enter* key. The function of these keys depends upon the software being used.



Up Arrow Key

This key moves the cursor one line up.

Down Arrow Key

This key moves the cursor one line down.

Right Arrow Key

This key moves the cursor one space right.

Left Arrow Key

This key moves the cursor one space left.

AT “F”Keys

Located along the top of the keyboard are 12 numbered “F” keys. They are part of the standard IBM-compatible extended keyboard layout. The functions of these “F” keys vary from one software program to another. Refer to your software manual for details on how they are used.

8200 System Function Key

Located on the bottom-left edge of the 8200 keyboard is a colored *Fn* key. It is a special key only found on the 8200 and it is used to:



- Change 8200 BIOS Utility settings.
- Utilize the 8200's KeyMouse feature.

The *Fn* key is discussed in detail in the next chapter.

Embedded Numeric Keypad

Sixteen keys in the middle of the keyboard, shown in Figure 2-7, are capable of providing numeric keypad functions.

Note

You must turn off the numeric keypad function to type in the normal alphanumeric mode.

To activate these functions:

1. Press the *NumLock* key to activate the embedded numeric keypad mode.
 - The system's NumLock status light will turn on and the keys of the embedded numeric keypad will use the smaller, colored numbers and symbols on the tops of the keys.
2. Press the *NumLock* key again to turn off the status light and return to the standard alphanumeric keyboard mode.

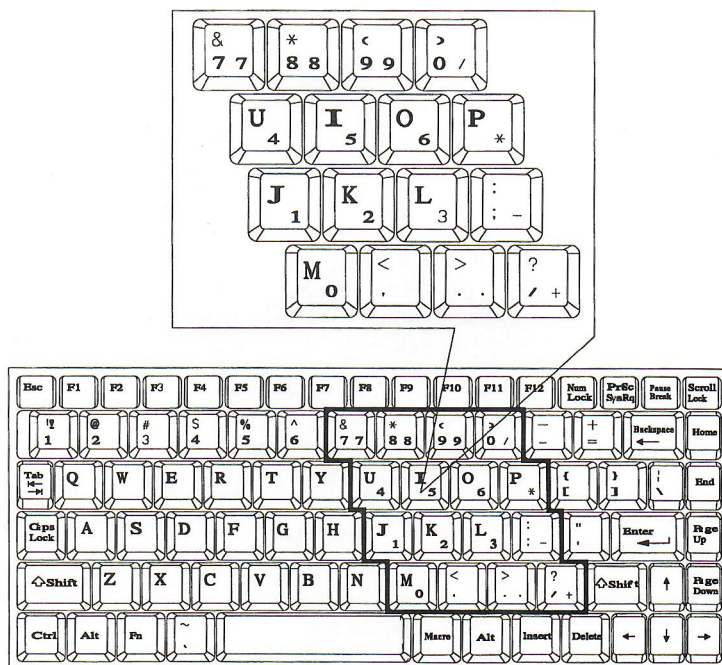


Figure 2-7
Keys of the embedded numeric keypad.

Disk Drives

The 8200 is equipped with one 2-1/2", high capacity hard disk drive, and one 3-1/2", 1.44MB floppy diskette drive.

3-1/2" Floppy Drive and Diskettes

The 8200's floppy diskette drive is labeled drive A: It is capable of starting the system when a bootable diskette is placed in it. It may be configured from within the Setup menu.

Inserting/Removing a Floppy Diskette

1. With the label side up, and the metal shutter toward the disk drive, gently insert the diskette into the drive until the diskette is properly seated.
2. To remove the diskette from the drive, press the ejection button on the left-hand side of the drive and remove the diskette.

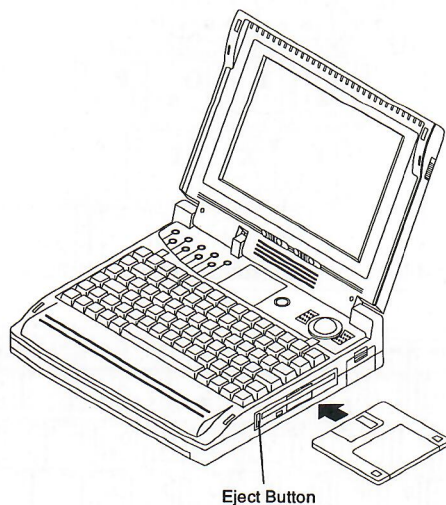


Figure 2-8
The 8200's floppy diskette drive.

Write-Protecting Floppy Diskettes

Diskettes can be write-protected to prevent files from being accidentally erased or destroyed. To write-protect a 3-1/2" floppy diskette, move the built-in write-protect tab to the write-protect position, ("up" so that you can see through the "hole" in the upper, right-hand corner of the diskette). Putting the write protect tab back "down" will enable you to write data on the disk again.

Do's and Don'ts

- Always make backup copies of your software and data diskettes.
- Keep diskettes away from magnetic fields.
- Do not remove diskettes from the drive while the diskette "in-use" light is on.
- Do not open or remove the protective shutter which covers the diskette's media.
- Do not allow dust or moisture to collect on diskettes.
- Do not bend or throw diskettes.
- Do not clean diskettes with liquids or solvents.

Hard Disk Drive

The 8200's 2-1/2" hard disk drive is internally connected and will automatically start when the system power is turned on. The hard disk drive comes from the factory pre-formatted and configured for use with MS-DOS. However, it contains no files and is not capable of booting (starting) the system.

If the hard disk drive is not bootable, you must start the system with a bootable diskette in floppy diskette drive A:

Refer to your DOS manual for more details about hard disk drives, DOS files, starting your system and formatting disks.

Note

*The hard disk drive comes formatted from the factory but contains **no** files.*

If you wish to have your system automatically boot from the hard disk drive, reformat it using the /s switch.

PCMCIA Slot

The 8200 includes a 10.5mm Type-III PCMCIA expansion slot. It may be used to install:

- Network or SCSI adapters.
- FAX/modem devices.
- Memory devices.
- PCMCIA compatible hard disk drives.
- Communication devices.

Inserting and Removing PCMCIA Cards

PCMCIA cards are inserted and removed in much the same way as floppy disks. Although PCMCIA cards are electronic devices, you do not need to turn off the system power to change them. Exit any applications you are using and return to the DOS prompt before inserting or removing a PCMCIA card.

Note

*If you use OS/2 as the computer's operating system, you must **turn off** the computer before inserting or removing a PCMCIA card.*

- To insert a card into the slot, align the card with the slot and push it in firmly until it locks into place.
- To remove a card from the upper slot, press the card eject button on the left side. To remove a card from the lower slot, press the card eject button on the right side.

Configuring and Operating PCMCIA Cards

To use a PCMCIA card with your system, it must be configured to operate properly with your software. For further details, refer to *Chapter 3: PCMCIA Drivers*, the README.TXT file on the included Utilities diskette, your software manual, and your PCMCIA card manual.

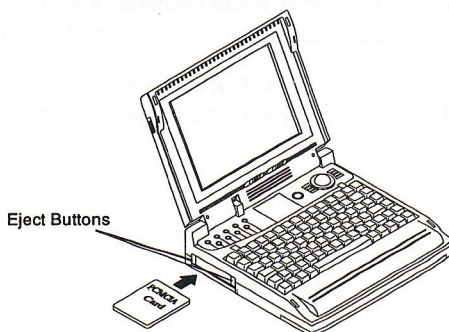


Figure 2-9
The 8200's PCMCIA slot.

Trackball Pointing Device

The integrated trackball pointing device allows you to conveniently take advantage of software that requires a mouse whenever you are away from your desk. It features a large diameter ball, two "mouse buttons," and is hardware and software compatible with the Microsoft mouse. It is shown below in Figure 2-10.

The trackball is internally wired to COM2 of the 8200 and requires no further hardware connections. Before using it, however, you must first activate it with an appropriate software driver. See your software manuals for further details.

You may disable the trackball from within the 8200 BIOS Utility pop-up menu.

If you wish to use the trackball with Windows or any other program which uses the same mouse software driver for both Microsoft and PS/2 type mice, please follow the special installation instructions in *Chapter 3: 8200 Utilities, KeyMouse*.

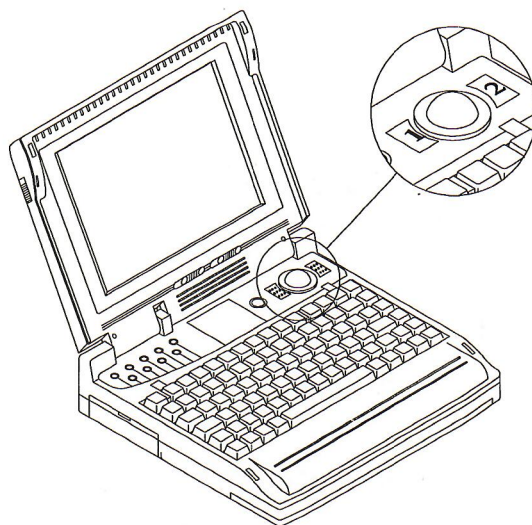


Figure 2-10
The 8200's trackball pointing device.

External Monitor

An external VGA-compatible device may be connected to the system through the 15-pin external monitor port located on the right side of the system unit. The 8200's video circuitry offers the following features:

- Local-bus controller.
 - Super-VGA resolution output to an external monitor.
 - Ability to drive internal and external displays simultaneously (SimulSCAN).
1. Connect an external monitor to the system.
 2. Use the 8200 BIOS Utility to switch the display mode. Refer to *Chapter 3: Utilities, 8200 BIOS Utility* for a detailed explanation on how to do this.
 3. Some of the display features supported by the 8200 BIOS Utility cannot be used with external monitors. Therefore, these features will become inactive after you switch operating modes.

Chapter 3

Utilities

Overview

The 8200 has several built-in software utilities to help you get the most from the system hardware. This chapter describes the features found in the POST, Setup menu, 8200 BIOS Utility, and the PCMCIA drivers. It discusses:

-  The Power-On-Self-Test (POST).
-  The Setup Menu.
-  8200 BIOS Utility.
-  PCMCIA Drivers.

Power-On Self Test (POST)

Each time the system is turned on, it automatically performs a Power-On-Self-Test (POST). This test involves checking the microprocessor, keyboard, display screen and driver, system memory and most of the options connected to the system.

POST takes about 3 to 15 seconds to complete, depending on the system options and amount of memory installed and the way the system is started. The beginning of POST is indicated by flashing of the keyboard's status lights.

POST will proceed to check the system hardware and configuration and will then present a screen message.

Screen Messages

POST: Normal Operation

If no configuration errors are detected, the system will beep once and display a screen message similar to the one shown in Figure 3-1.

```
486DX Modular BIOS V3.20-00bT
Copyright(c)1984-90 Award Software Inc.
Notebook 8200

TESTING INTERRUPT CONTROLLER #1.....PASS
TESTING INTERRUPT CONTROLLER #2.....PASS
TESTING CMOS BATTERY.....PASS
TESTING CMOS CHECKSUM.....PASS
SIZING SYSTEM MEMORY.....640K FOUND
TESTING SYSTEM MEMORY.....PASS
CHECKING UNEXPECTED INTERRUPTS AND STUCK NMI.....PASS
TESTING PROTECTED MODE.....PASS
SIZING EXTENDED MEMORY.....03072K FOUND
TESTING MEMORY IN PROTECTED MODE.....03712K PASS
TESTING PROCESSOR EXCEPTION INTERRUPTS.....PASS
BIOS SHADOW RAM.....ENABLED
VIDEO SHADOW RAM.....ENABLED
SECONDARY CACHE CONTROLLER.....ENABLED

<PRESS CTRL-ALT-ESC FOR SETUP>
```

Figure 3-1
POST screen message - no errors.

POST: Error Detected

If a configuration error is detected, the system will beep twice and display a message similar to the one in Figure 3-2. Upon encountering such a message, you should reboot the system, enter the Setup menu, fix the problem, and restart the system.

```

486DX Modular BIOS V3.20-PR
Copyright(c)1984-90 Award Software Inc.
Notebook 8200

TESTING INTERRUPT CONTROLLER #1.....PASS
TESTING INTERRUPT CONTROLLER #2.....PASS
TESTING CMOS BATTERY.....PASS
TESTING CMOS CHECKSUM.....PASS
SIZING SYSTEM MEMORY.....640K FOUND
TESTING SYSTEM MEMORY.....PASS
CHECKING UNEXPECTED INTERRUPTS AND STUCK NMI.....PASS
TESTING PROTECTED MODE.....PASS
SIZING EXTENDED MEMORY.....03072K FOUND
TESTING MEMORY IN PROTECTED MODE.....03712K PASS
TESTING PROCESSOR EXCEPTION INTERRUPTS.....PASS
BIOS SHADOW RAM.....ENABLED
VIDEO SHADOW RAM.....ENABLED
SECONDARY CACHE CONTROLLER.....ENABLED

MEMORY SIZE ERROR - RUN SETUP
PRESS F1 KEY TO CONTINUE OR CTRL-ALT ESC FOR SETUP
    
```

Figure 3-2
Memory error detected during POST.

Beep Messages

In addition to screen messages, POST also produces beep messages to alert you of the system's status. They are described below in Table 3-1.

Beep Message	Meaning	Action
1 short beep	No errors detected during POST.	No action required, normal system operation.
1 long beep followed by 2 short beeps	Video failure or improper video configuration.	Check the video adapter to be sure it is configured properly. If this is not the cause of the problem, the adapter may be damaged and will require repair or replacement.
2 Short Beeps accompanied by screen message, "Press F1 to continue"	Non-fatal error.	The POST has detected a "non-fatal" error which will not affect use of the system. Press the F1 key to continue or enter the Setup menu to determine the nature of the error.

Table 3-1
Beep messages produced during POST.

The Setup Menu

The Setup menu is a ROM-based utility program which allows you to modify system configuration information stored in CMOS memory.

Information in the Setup Menu

There are two pages in the Setup menu, the first one handles basic display and hardware configuration. The second page offers extended features regarding memory handling and system driver selection. Table 3-2 shows the system settings that may be changed from within the Setup menu.

Page one	Field	Setting
	Date/Time	System date/time.
	Diskette A	Configuration of diskette drive A.
	Disk 1	Type of hard disk drive.
	Video	Type of primary video adapter.
	Base Memory	Amount of base memory installed.
	Extended Memory	Amount of extended memory installed.
	Error Halt	Error handling procedure when an error is detected during POST.
	Speed Select	Set CPU speed.
	Security Features	Sets password protection for the Setup menu and booting.
Page two	Field	Setting
	Fast Gate A20	Sets the Fast Gate A20 option.
	Fast CPU Reset	Sets the Fast CPU Reset option.
	System BIOS	Sets system BIOS shadowing.
	Video BIOS	Sets video BIOS shadowing.
	External Cache	Enables/disables the external cache memory.
	Non-cacheable Block	Allows user to reserve certain memory areas as non-cacheable.
	Extended Function Key	Selects the operating key(s) for the 8200 BIOS Utility.

Table 3-2
System settings which may be changed from within the Setup menu.

Invoking the Setup Menu

The Setup menu is accessed during the boot process. Simultaneously press the *Ctrl*, *Alt*, and *Esc* keys while the system is booting and the following message is displayed at the bottom of the screen.

< PRESS CTRL-ALT-ESC FOR SETUP >

The above message only lasts about three seconds. If you miss it and the computer continues to finish its boot process, you must reboot the system and try again within the time limit.

The first page of the Setup menu will be displayed immediately after you press the *Ctrl-Alt-Esc* key combination. Press the *PgDn* or *PgUp* key to move to the second page. Both pages of the Setup menu are shown in Figures 3-3 and 3-4.

Chapter 3: Utilities

AWARD SOFTWARE CMOS SETUP							
CPU TYPE: 80486 DX							
DATE (MM/DD/YY)		4/22/93		TIME (HH:MM:SS) 11: 8:49			
DISKETTE A		1.4M					
DISK 1 116Mb		22	CYLS. 762	HEADS 8	SECTORS 39	PRECOMP NONE	LANDZ. 0
VIDEO		EGA/VGA					
BASE MEMORY		640 (FOUND = 640)					
EXTENDED MEMORY		3072 (FOUND = 3072)					
ERROR HALT		o HALT ON ALL ERRORS					
SPEED SELECT		LOW					
SECURITY FEATURES		LOCKS DISABLED					
<PgUp/PgDn> Next page, ↑ ↓ + - ← → Move, <Space>/+/- Change values F1: Help, F2: Color toggle, F3: Exit without save, F10: Save & exit							

Figure 3-3
Setup menu - Page one.

AWARD SOFTWARE EXTENDED SETUP		
KEYBOARD CONTROLLER EMULATION MENU		
Fast Gate A20: Disabled	Fast CPU Reset: Disabled	
SHADOW RAM SELECTION		
System BIOS: Disabled	Video BIOS: Disabled	
C8000-CBFFF: Disabled	D0000-D3FFF: Disabled	
CC000-CFFFF: Disabled	D4000-D7FFF: Disabled	
	D8000-DBFFF: Disabled	
	DC000-DFFFF: Disabled	
CACHE CONTROL SELECTION		
External Cache: Disabled		
Non-Cacheable Block	Size: Disable	Start Address: 0000000H
SYSTEM SWITCH SELECTION		
SCSI Check: Enabled	OS Environment: DOS	
Extended Function: Fn	(Popup + Immed.)	
<PgUp/PgDn> Next page, ↑ ↓ + - ← → Move, <Space>/+/- Change values F1: Help, F2: Color toggle, F3: Exit without save, F10: Save & exit		

Figure 3-4
Setup menu - Page two.

Making Changes in the Setup Menu

The keys listed below are used for entering and modifying values within the Setup menu.

Action	Keys Used	Description
Enter the Setup menu	Ctrl-Alt-Esc	Simultaneously press the Ctrl-Alt-Esc key combination to enter the Setup menu.
Changing menus	PgUp PgDn	Press the PgUp key to move to the previous menu. Press the PgDn key to move to the next menu.
Changing fields	Down arrow (↓) / Enter Up arrow (↑) Left arrow (←) Right arrow (→)	Press the Down arrow or Enter key to move to the next field. Press the Up arrow to move to the previous field. Press the right arrow to move to a field on the right. Press the left arrow to move to a field on the left.
Changing field values	Plus (+) / Space bar Minus (-)	Press the Plus, Space bar or Minus keys to change settings within fields. You may also directly type in numeric values from the keyboard.
Pop-up help menu	F1	Press the F1 key for a pop-up help menu describing the currently highlighted feature. Press any other key to exit.
Exiting and saving changes	F10	Press the F10 key to save setting changes. Then press F5 to confirm (see below).
Confirming changes	F5	Press the F5 key to confirm your changes. Press any other key to abort changes and return to the Setup menu.
Exiting without saving changes	F3	Press F3 to exit the Setup menu without making any changes.
Color toggle	F2	Press F2 to change the Setup menu's display mode from monochrome to color.
Correcting typing mistakes	Backspace	Press the Backspace key to correct (delete) typing mistakes.

Table 3-3
Keys used to change settings in the Setup menu.

Features of the Setup Menu

Page One

Date

Enter the current date in the following format:

MM/DD/YY	
MM	The month from 1 to 12.
DD	The date from 1 to 31.
YY	The last two digits of the year.
/(slash)	Must separate each entry.

Time

Enter the current time in the following format:

HH:MM:SS	
HH	The hour from 00 to 24 (e.g. 1pm = 13).
MM	The minute from 00 to 60.
SS	The second from 00 to 60.
:(colon)	Must separate each entry.

Diskette A

Choose one of the following operating mode capacities for the built-in floppy diskette drive. If you connect an external floppy drive, a new entry *Diskette B* will appear in this area:

None	Disables the floppy disk drive.
360K	360 kilobyte capacity.
1.2M	1.2 megabyte capacity.
720K	720 kilobyte capacity.
1.4M	1.44 megabyte capacity (default).

Disk 1

Enter the configuration information for the internal hard disk. If your hard disk drive *Type* number is not listed, select *Type 48* or *49* to enter custom parameters. Write your configuration information here for future reference:

Type		Sectors	
Cylinders		Precomp	
Heads		Land Zone	

Video

Enter the primary type of video adapter used with the system. The 8200's internal video adapter type is EGA/VGA.

Base Memory

Enter the amount of base memory. The system has an auto-detect feature and is configured for 640KB of base memory.

Extended Memory

Enter the amount of extended memory, (located above the 1MB address). The system has an auto-detect feature and the value you enter in the extended memory field should match the amount of extended memory automatically detected by the system. *This value will change if you install more memory into the system.* (A 4MB system has 3MB extended memory. Enter the value 3072 for this configuration.)

Due to limitations of DOS, extended memory must usually be activated through the use of an extended memory software management utility, (such as EMM386.SYS) before it can be used. Refer to your DOS manual or dealer for more details.

Error Halt

Stops the system if POST detects error(s) during start up:

Halt on all errors	Whenever the BIOS detects a non-fatal error, the system will stop and prompt the user.
No halt on any errors	The system boot will not stop for any errors that are detected.
No keyboard error halt	The system boot will not stop for a keyboard error; it will stop for all other errors.
No disk error halt	The system boot will not stop for a disk error; it will stop for all other errors.
No keyboard or disk halt	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Speed Select

Sets the CPU speed during boot up:

No change	The speed will not change (default speed is high).
Low	The system will be set to low speed.
High	The system will be set to high speed.

Note

Be careful! If you forget your password and are subsequently unable to start your computer, you must send the system to a certified repair center to have the lock reset.

Security Features

This feature allows you to set password protection to prevent unauthorized use of the system or modification of the Setup menu. It uses a special internal battery and cannot be “hacked” by someone without the password. *Be very careful when using this feature! If you forget your password, you may not be able to start your computer again:*

Locks Disabled	Do not use the lock feature (default).
System/Setup Lock	Set password protection for booting (starting) the system and for entering the Setup menu.
Setup Lock	Set password protection for entering the Setup menu only.

Setting a security password

1. After enabling one of the lock features, you will be asked to select a password immediately after you exit the Setup menu.
2. Type in a single word, up to eight characters in length.
3. You will be asked to type in the password a second time for verification.
4. The next time someone tries to start the computer or enter the Setup menu, they will be asked to type the password. If they do not succeed after three attempts, the system will halt and must be restarted.

Page Two***Fast Gate A20 / Fast CPU Reset***

These features may be used to optimize system performance in some situations. The 8200 is capable of generating a fast GATE A20 to switch from real to protected mode and a fast CPU reset to switch from protected to real mode. If these signals are not generated by the system, the same job must be processed through the keyboard controller. The keyboard controller is a relatively slow device and may create “bottlenecks” in the flow of data:

Fast Gate A20	Enables/Disables the Fast Gate A20 function.
Fast CPU Reset	Enables/Disables the Fast CPU Reset function.

Shadow RAM Selection – System BIOS / Video BIOS

The process of “shadowing” copies instructions from slower BIOS ROM into RAM for faster access. You may shadow system BIOS, video BIOS and other ROM BIOS installed to corresponding addresses in RAM:

System BIOS	Enables/Disables System BIOS shadowing.
Video BIOS	Enables/Disables Video BIOS shadowing.
16K Block Shadow RAM (8 blocks of RAM, C0000 to DFFFF)	Enables/Disables 16K blocks of RAM for use as shadow RAM for any ROM BIOS in add-in cards.

Chapter 3: Utilities

External Cache / Non-Cacheable Block

Cache memory may help the CPU process instructions faster by reducing the number of times it must look into slower “conventional” memory. These features control the operation of the 8200’s optional 128KB external memory cache:

External Cache	Enables/Disables the external memory cache feature.
Non-Cacheable Block	Allows user to reserve certain memory areas as non-cacheable.

Extended Function

Selects the starting key combination and operating mode of the 8200 BIOS Utility. See the next section for more information about the 8200 BIOS Utility:

Fn	Uses the 8200’s special Fn key to change system settings with the 8200 BIOS Utility. Changes may be performed directly or via a pop-up menu.
Ctrl+Alt+Esc	Uses the Ctrl+Alt+Esc key combination to change system settings with the 8200 BIOS Utility. This key combination may be used with the 8200 keyboard or an externally connected keyboard. Changes may only be performed via a pop-up menu.

8200 BIOS Utility

The 8200 has special control features built into its BIOS. They are used to control a variety of system functions.

Operating Modes

You can access the 8200 BIOS Utility by either:

Pop-up Menu Mode

Use a pop-up menu to help you change BIOS settings.

Note

*If you selected the Ctrl+Alt+Esc mode, you will **only** be able to make changes to the system through the pop-up menus. You will not be able to use the immediate mode key combinations.*

- A. Depending on the setting of the Extended Function field in Setup, press the *Fn-Esc* or the *Ctrl-Alt-Esc* key combination to enter the 8200 BIOS Utility pop-up menu.
- B. Use the following keys to make selections within the pop-up menu:

Up / Down arrow keys	Move between fields.
Right / Left arrow keys	Change field settings.
PgUp / PgDn keys	Change pages.
F1 key	Pop-up help menu describing the currently active field.
s key	Save settings.
Esc key	Exit the pop-up menu.

Immediate Mode

Press key combinations to directly change BIOS settings.

Note

The Fn lock function is primarily used to facilitate operation of the KeyMouse feature. However, it issues all immediate mode commands and affects normal use of the keyboard.

Disable it under most circumstances.

- Press the *Fn* and *m* keys together to lock the *Fn* key function. The Fn indicator light will turn on and the keyboard will respond as if the *Fn* key is continuously being held down.

Press the *Fn* and *m* keys together a second time to unlock the *Fn* key function.

Features of the 8200 BIOS Utility

Table 3-4, starting on the next page, shows system features which may be modified with the 8200 BIOS Utility and the keys used to make changes.

Feature	Option	Function	Changing Settings
Reverse Video (Monochrome panel only)	Reverse	Displays characters/pixels black on white.	Pop-up menu.
	Normal	Displays characters/pixels white on black.	Immediate Mode. Fn key + F2 key
Expanded Mode (panel only)	Enable	Controls vertical expansion of the text and graphics modes to fill the screen as much as possible.	Pop-up menu.
	Disable	Disables the above function.	Immediate Mode. Fn key + F3 key
Centering Mode (panel only)	Center	Aligns the display area with the center position.	Pop-up menu.
	Top	Aligns the display area with the top position.	Immediate Mode. Fn key + F4 key
Track Ball	Enable	Enables the built-in trackball.	Pop-up menu only.
	Disable	Disables the built-in trackball.	
Display Type (The CRT mode setting cannot be saved)	Panel	Activates the system's display panel.	Pop-up menu.
	CRT	Activates an externally connected monitor.	Immediate Mode. Fn key + F5 key
	SimulSCAN	Activates both the display panel and an external monitor simultaneously.	
PMU Switch	Enable	Turns on the system power management unit.	Pop-up menu only.
	Disable	Turns off the system power management unit.	

Table 3-4
Features of the 8200 BIOS Utility.

Panel Sleep	Off	Disables the display panel sleep function.	Pop-up menu only.
	3	Turns off the display panel backlight after 3 minutes of inactivity.	
	6	Same as above, 6 minutes.	
	9	Same as above, 9 minutes.	
	12	Same as above, 12 minutes.	
	15	Same as above, 15 minutes.	
HDD Sleep	Off	Disables the hard disk drive sleep feature.	Pop-up menu only.
	3	Turns off the HDD motor after 3 minutes of HDD inactivity.	
	6	Same as above, 6 minutes.	
	9	Same as above, 9 minutes.	
	12	Same as above, 12 minutes.	
	15	Same as above, 15 minutes.	

Table 3-4
Features of the 8200 BIOS Utility

Feature Descriptions

Power Management Unit (PMU)

The 8200 features a hardware-based, non-event driven power management unit. It reduces power consumption and lowers system operating temperature by automatically switching the CPU from turbo to standard speed whenever the CPU is not processing an instruction. The PMU can be enabled or disabled from within the 8200 BIOS Utility pop-up menu.

Display Features

The 8200 supports several features designed to enhance the output of its display panel:

Reverse Display Mode

Reverse display mode allows you to switch between viewing white characters on a black background or black characters on a white background. Viewing the display in reverse mode may improve its appearance in some situations. This feature is only available for monochrome displays.

Expanded Display Mode

The aspect ratio of display panels is not the same as CRT monitors. Therefore, the display may not completely fill the entire display panel. Expanded mode will stretch the display to fill the entire viewing area of the display panel.

Centering Display Mode

When the expanded mode is not used, the display will shift to the top of the screen leaving a blank band at the bottom. Centering mode moves the display to the center of the display panel.

Display Type

Display type mode allows you to switch between the display panel, an external monitor, or to show them simultaneously. You may not save the CRT mode setting; this prevents your screen from blanking and causing you to lose control of the system.

Note

The KeyMouse mode emulates a "left-hand" type mouse. Therefore the mouse buttons are "reversed."

KeyMouse - Mouse Control Emulation

The 8200 allows you to emulate mouse control through the use of keyboard commands.

1. Activate the KeyMouse function from within the 8200 BIOS Utility pop-up menu. If you use the *Fn* system function key, the KeyMouse feature is always active; skip this step. However, if you use the *Ctrl+Alt+Esc* system function key combination, the KeyMouse feature may be enabled or disabled. Be sure it is activated before using it.
2. Install an appropriate PS/2 mouse software driver. Use the same driver as if you were installing a true hardware-based mouse.
3. Use the following key combinations to issue mouse commands from the keyboard. Your software should behave as if an actual mouse were installed on the system.

Key Combination	Issued Command
<i>Fn</i> key	Hold down this key while pressing any of the following keys to issue a mouse control command.
<i>Fn</i> + <i>M</i> key	Press these keys together to lock the keyboard into mouse control mode. While in the locked mode, you do not need to hold down the <i>Fn</i> key to issue mouse control commands. Press this key combination a second time to unlock the keyboard. The <i>Fn</i> status light will turn on while this function is active.
Up Cursor key	Moves the mouse cursor up. May be used together with R/L arrow keys.
Down Cursor key	Moves the mouse cursor down. May be used together with R/L arrow keys.
Right Cursor key	Moves the mouse cursor right. May be used together with U/D arrow keys.
Left Cursor key	Moves the mouse cursor left. May be used together with U/D arrow keys.
<i>X</i> key	"Primary" mouse button click. This is equivalent to the left mouse button of a right-hand type mouse.
<i>Z</i> key	"Secondary" mouse button click. This is equivalent to the right mouse button of a right-hand type mouse.
<i>Q</i> ~ <i>Y</i> keys	Controls the sensitivity of the KeyMouse. <i>Q</i> offers the finest degree of control for moving in small areas. <i>Y</i> offers the coarsest degree of control for moving over large areas.

Table 3-5

Keys used with the keyboard mouse emulation feature.

KeyMouse and Trackball

Because the KeyMouse feature and the system's built-in trackball emulate different types of mice, (PS/2 type and Microsoft type) some software programs which use a single mouse driver for both types may become confused if they are active at the same time, (such as Microsoft Windows). To activate the pointing device of your choice, try the following:

- Disable the pointing device you do not want to use.
- Use a software mouse driver that lets you selectively activate a particular type of mouse, or use "single model" mouse drivers.
- Set up your software so that it only recognizes the mouse type you wish to use, (or ignores the one you do not wish to use).

Special Procedures for Windows Users to Use Pointing Devices

There are two types of mouse to be chosen :

1. Trackball (Microsoft type)
2. KeyMouse (PS/2 type)

Please follow the instructions when installing Windows 3.1 :

1. When Extended Function = Fn (pop up + Immed.) under BIOS setup, KeyMouse (PS/2 type) enables. Choose Microsoft or IBM PS/2 as the mouse type under Windows setup program. Trackball won't be active in the process of installation.

2. When Extended Function = Ctrl + Alt + Esc (pop up only) under BIOS setup, KeyMouse disables. Choose Microsoft or IBM PS/2 as the mouse type under Windows setup program. Trackball is active in the process of installation.

Go back to DOS prompt after installation. Use WMPRESET to make KeyMouse, trackball, or mouse connected to COM1 (Microsoft type if there is any) active under Windows :

WMPRESET / P : KeyMouse (PS/2 type), to make Fn useful before
or after installation

WMPRESET / 2 : Trackball (COM2)

WMPRESET / 1 : Mouse connected (COM1)

Sleep / Power Conservation Features

The 8200 BIOS Utility offer several functions to conserve system power consumption while various parts of the system are not actively being used.

HDD

HDD sleep turns off the Notebook Computer's internal hard disk drive motor if it has not been accessed after a certain period of time. The motor will be turned on again the next time the system attempts to read or write data to it.

LCD

LCD sleep shuts off the Notebook Computer's LCD display panel backlight after a certain period of keyboard inactivity. The display panel backlight will be turned on again the next time any key is pressed.

CPU (PMU)

If the system is run at turbo speed, the PMU slows down the CPU clock to normal speed when the processor is not processing an event. It will automatically return to high speed the next time it processes an event.

PCMCIA Drivers

Description

The Notebook Computer's PCMCIA expansion socket requires the use of software drivers to control the operation of the socket and any PCMCIA cards inserted into it. Provided with the 8200 is a utilities diskette that includes several PCMCIA software drivers:

Socket Services

Socket Services gives the Notebook Computer a standard software interface to allow different PCMCIA cards to be used with the system.

Card Services

Card Services coordinates the activities of PCMCIA cards, sockets, and system resources among the software programs, utilities, and drivers that call upon them.

Other Drivers

Various other drivers are available for different PCMCIA cards that you might attach to the system. They are device and application specific. You will need special drivers for:

- Memory cards
- SRAM cards
- Windows applications
- IDE (hard drive)
- Communication cards (FAX/modem)

Installation and Usage

In order to use a PCMCIA card with your system, you will have to:

1. Install the *Socket Services* driver to activate the socket.
2. Install the *Card Services* driver to prepare the system.
3. Install device specific drivers designed to work with the PCMCIA cards you will install.

Chapter 3: Utilities

PCMCIA drivers are constantly be written and revised as the list of available PCMCIA devices grows. Therefore, we have included the latest available drivers and instructions on how to use them on the PCMCIA diskette. Please refer to the Utility diskette for further instructions.

Appendices

Overview

The following appendices provide the following information:

-  System specifications.
-  I/O port pin assignments.
-  Keyboard scan and ASCII codes.

Appendix A: Specifications

CPU (one of the following):	Intel 80486DX-33 Intel 80486DX2/66
BIOS	Award
Intelligent Power Management	DIA
Cache Memory (optional)	128K
On-board DRAM	
Base configuration	4MB
Maximum configuration	20MB
System and Video ROM	128K
Video RAM	512K
I/O	
PCMCIA	Type III
Driver	System Soft
Trackball	Microsoft compatible
Serial Port	2 (1 external 9-pin connector, 1 internally wired to trackball)
Parallel Port	1 (25-pin Centronics compatible)
External Video Port	1 (15-pin super-VGA local-bus signal)
PS/2 Port	1 (fully PS/2 compatible)
Expansion Port	1 (200-pin)
Disk Drives	
Hard Disk Drive	2.5", IDE type
Floppy Disk Drive	3.5", high-density type, 1.44MB
Power Supply	Universal, auto-sensing, switching type
Input	110~240VAC @ 50~60Hz, 1.2A
Output	
DC	20VDC, .7A
Battery Quick Charge	25VDC, 1.2A
Battery Pack	Nickel-Cadmium
Voltage	12V
Current	2.8AH
Recharge Time	120 Minutes
Keyboard	86-key, multi-functional
Physical Specifications	
Weight	3kg
Size	282.8mm(w) x 222.5mm(l) x 52.5mm(h)
Temperature	
Storage	-10°~50° c
Operation	0°~35° c
Humidity	
Storage	0%~90%, non-condensing
Operation	20%~85%, non-condensing
Altitude	2500 m
Shock	2G 10+/- microsecond pulse

Appendix B: I/O Port Pin Assignments

Parallel Port

Pin	Signal	Pin	Signal
1	STROBE	14	AUTOFD
2	D0	15	ERROR
3	D1	16	INIT
4	D2	17	SLCTIN
5	D3	18	GND
6	D4	19	GND
7	D5	20	GND
8	D6	21	GND
9	D7	22	GND
10	ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

Serial Port

Pin	Signal
1	DCD
2	RD
3	SD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Monitor Port

Pin	Signal	Pin	Signal
1	R	9	NC
2	G	10	GND
3	B	11	NC
4	NC	12	NC
5	GND	13	HSYNC
6	GND	14	VSYSN
7	GND	15	NC
8	GND		

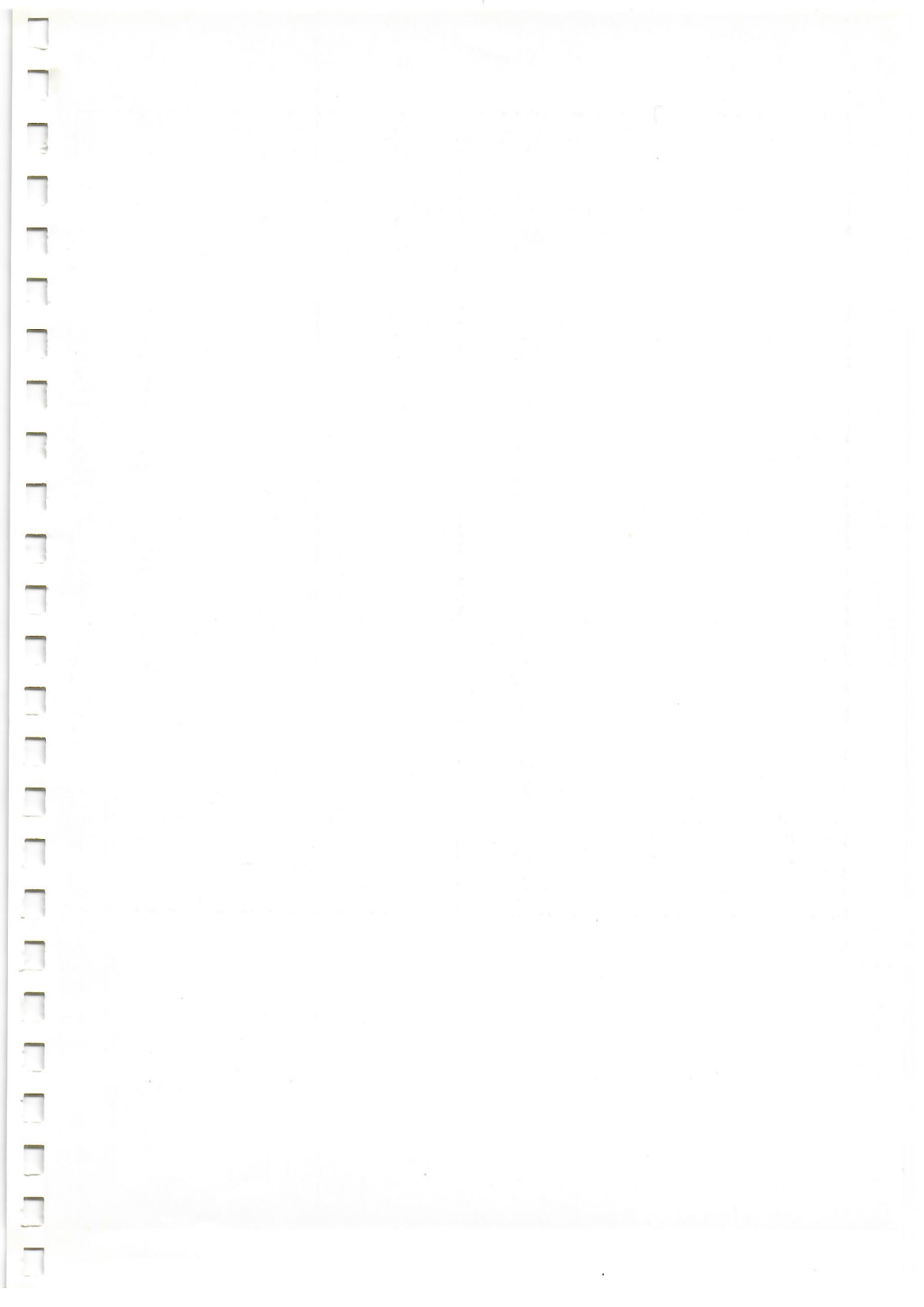
PCMCIA Port

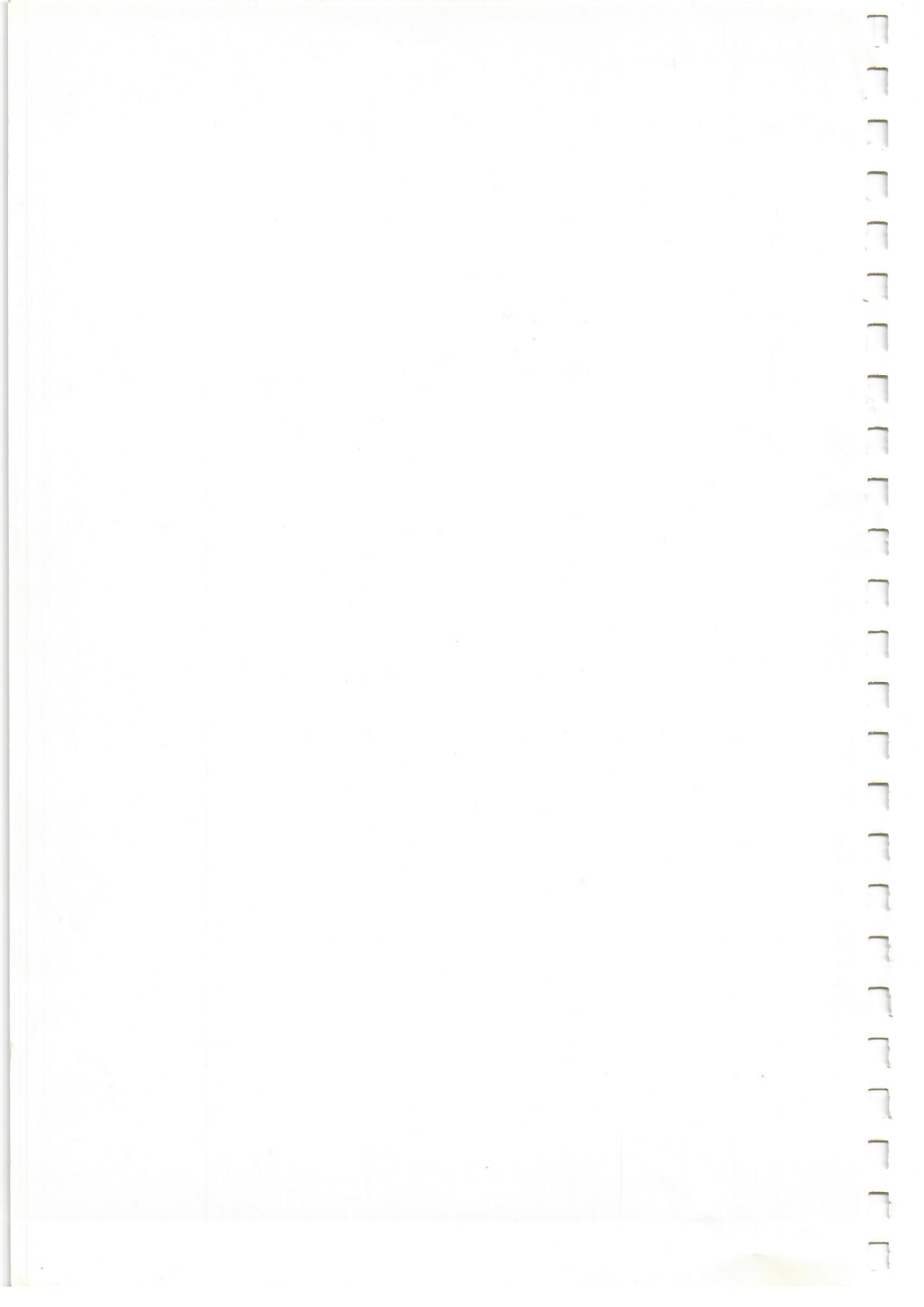
Pin	Signal	Pin	Signal	Pin	Signal
1	GND	24	A5	47	A18
2	D3	25	A4	48	A19
3	D4	26	A3	49	A20
4	D5	27	A2	50	A21
5	D6	28	A1	51	VCC
6	D7	29	A0	52	VPP2
7	CE1	30	D0	53	A22
8	A10	31	D1	54	A23
9	OE	32	D2	55	A24
10	A11	33	CARD16	56	A25
11	A9	34	GND	57	RFU
12	A8	35	GND	58	RESET
13	A13	36	CD1	59	WAIT
14	A14	37	D11	60	INPACK
15	WE/PGM	38	D12	61	REQ
16	IREQ	39	D13	62	SPKR
17	VCC	40	D14	63	CHSTS
18	VPP1	41	D15	64	D8
19	A16	42	CE2	65	D9
20	A15	43	RFSH	66	D10
21	A12	44	IORD	67	CD2
22	A7	45	IOWR	68	GND
23	A6	46	A17		

Appendix C: Keyboard Scan and ASCII Codes

Key	Scan Code	ASCII	Key	Scan Code	ASCII
a	1E	61	A	1E	41
b	30	62	B	30	42
c	2E	63	C	2E	43
d	20	64	D	20	44
e	12	65	E	12	45
f	21	66	F	21	46
g	22	67	G	22	47
h	23	68	H	23	48
i	17	69	I	17	49
j	24	6A	J	24	4A
k	25	6B	K	25	4B
l	26	6C	L	26	4C
m	32	6D	M	32	4D
n	31	6E	N	31	4E
o	18	6F	O	18	4F
p	19	70	P	19	50
q	10	71	Q	10	51
r	13	72	R	13	52
s	1F	73	S	1F	53
t	14	74	T	14	54
u	16	75	U	16	55
v	2F	76	V	2F	56
w	11	77	W	11	57
x	2D	78	X	2D	58
y	15	79	Y	15	59
z	2C	7A	Z	2C	5A
1	02	31	!	02	21
2	03	32	@	03	40
3	04	33	#	04	23
4	05	34	\$	05	24
5	06	35	%	06	25
6	07	36	^	07	5E
7	08	37	&	08	26
8	09	38	*	09	2A
9	0A	39	(	0A	28
0	0B	30	)	0B	29
F1	3B	00	(shift) F1	54	00

Key	Scan Code	ASCII	Key	Scan Code	ASCII
F2	3C	00	(shift) F2	55	00
F3	3D	00	(shift) F3	56	00
F4	3E	00	(shift) F4	57	00
F5	3F	00	(shift) F5	58	00
F6	40	00	(shift) F6	59	00
F7	41	00	(shift) F7	5A	00
F8	42	00	(shift) F8	5B	00
F9	43	00	(shift) F9	5C	00
F10	44	00	(shift) F10	5D	00
'	29	60	~	29	7E
-	0C	2D	Underline	0C	5F
=	0D	3D	+	0D	2B
Backspace	0E	08			
Tab (right)	0F	09	Tab (left)	0F	00
[	1A	5B	{	1A	7B
]	1B	5D	}	1B	7D
\	2B	5C		2B	7C
;	27	3B	:	27	3A
,	28	27	"	28	22
Enter	1C	0D			
,	33	2C	<	33	3C
.	34	2E	>	34	3E
/	35	2F	?	35	3F
↑	48	00			
↓	50	00			
→	4D	00			
←	4B	00			
PgUp	49	00			
PgDn	51	00			
Home	47	00			
End	4F	00			
Del	53	00			
Ins	52	00			





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